CLAIMS

1.   An image processing method of generating an image
of a virtual space formed from a virtual object
including at least one part, characterized by
5   comprising:

a first acquisition step of acquiring a position
and orientation of a viewpoint of an observer;

a second acquisition step of acquiring a position
and orientation of a pointing device which is worn by
10   the observer on a hand to execute various kinds of
operations;

a layout step of laying out a list image to
display a list of pieces of information about the parts
near the position acquired in the second acquisition
15   step;

a virtual space image generation step of
generating the image of the virtual space after laying
out the list image, which is seen in accordance with
the position and orientation of the viewpoint; and
20   an output step of outputting the image generated
in the virtual space image generation step to a
predetermined display device.

2.   The method according to claim 1, characterized in
25   that in the layout step, the list image is laid out
while making a plane of the list image, on which the
pieces of information about the parts are described,

visible from the position and orientation of the

viewpoint.

3.   The method according to claim 1, characterized in

5   that in the layout step, the list image is laid out at

a position that internally divides a line segment

connecting the position acquired in the first

acquisition step and the position acquired in the

second acquisition step to t : (1-t).

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4.   The method according to claim 1, characterized by

further comprising a layout control step of controlling

processing in the layout step in accordance with an

instruction whether to display the list image to switch

15   whether to contain the list image in the virtual space

image.

5.   The method according to claim 1, characterized by

further comprising a conversion step of converting the

20   list image into a semitransparent image in accordance

with an instruction to change the list image to the

semitransparent image.

6.   The method according to claim 1, characterized by

25   further comprising

a determination step of determining on the basis

of the position and orientation of the viewpoint and a

position of the virtual object whether the virtual

object is present in a direction of line of sight of

the viewpoint, and

a transparency control step of, when it is

5   determined in the determination step that the virtual

object is present, making a transparency of the list

image higher than that when it is determined in the

determination step that the virtual object is not

present.

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7.   The method according to claim 1, characterized by

further comprising

a distance calculation step of calculating a

distance between the position of the pointing device

15   and the position of the virtual object, and

a list image generation step of generating the

list image to display the list of pieces of information

about the parts up to a layer level corresponding to

the distance calculated in the distance calculation

20   step in a hierarchical structure of the parts included

in the virtual object.

8.   The method according to claim 1, characterized in

that the list image is an image to display a list of

25   pieces of information about, of the parts included in

the virtual object, a part at a position closest to the

position of the pointing device acquired in the second

acquisition step.

9.   The method according to claim 1, characterized in
that in the virtual space image generation step, when
5 the list image overlaps a hand region in the physical
space image acquired in the physical space image
acquisition step, the image of the virtual space is
generated on the basis of priority data to designate
which of the hand region and the list image should be
10 rendered in front.

10.   The method according to claim 9, characterized by
further comprising a designation step of designating
which of the hand region and the list image should be
15 rendered in front,
        wherein in the designation step, designated
contents are set to the priority data.

11.   An image processing method of generating a
20 virtual image corresponding to a position and
orientation of an observer and compositing the virtual
image with a physical image corresponding to the
position and orientation of the observer, including
        acquiring the position and orientation of the
25 observer,
        generating the virtual image in accordance with
the position and orientation of the observer, and

compositing the physical image corresponding to
the position and orientation of the observer with the
virtual image, characterized by comprising:

acquiring a position of pointing means operated
5 by the observer;

identifying a part pointed by the pointing means;

generating a part information virtual image to
display information about the identified part; and

determining a layout position of the part
10 information virtual image in accordance with the
position of the pointing means.

12.   The method according to claim 11, characterized
in that the layout position is determined in accordance
15 with the position of the pointing means and the
position and orientation of the observer.

13.   The method according to claim 11, characterized
in that the information about the part comprises a list
20 of a plurality of parts associated with the identified
part.

14.   An image processing apparatus of generating an
image of a virtual space formed from a virtual object
25 including at least one part, characterized by
comprising:

first acquisition unit adapted to acquire a

position and orientation of a viewpoint of an observer;

second acquisition unit adapted to acquire a position and orientation of a pointing device which is worn by the observer on a hand to execute various kinds

5   of operations;

layout unit adapted to lay out a list image to display a list of pieces of information about the parts near the position acquired by said second acquisition unit;

10   virtual space image generation unit adapted to generate the image of the virtual space after laying out the list image, which is seen in accordance with the position and orientation of the viewpoint; and

output unit adapted to output the image generated

15   by said virtual space image generation unit to a predetermined display device.

15.   An image processing apparatus of generating a virtual image corresponding to a position and

20   orientation of an observer and compositing the virtual image with a physical image corresponding to the position and orientation of the observer, comprising:

acquiring unit adapted to acquire the position and orientation of the observer,

25   generating unit adapted to generate the virtual image in accordance with the position and orientation of the observer, and

compositing unit adapted to composite the

physical image corresponding to the position and

orientation of the observer with the virtual image,

characterized by comprising:

5   acquiring unit adapted to acquire a position of

pointing means operated by the observer;

identifying unit adapted to identify a part

pointed by the pointing means;

generating unit adapted to generate a part

10   information virtual image to display information about

the identified part; and

determining unit adapted to determining a layout

position of the part information virtual image in

accordance with the position of the pointing means.

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16.   A program characterized by causing a computer to

execute an image processing method of claim 1.

17.   A program characterized by causing a computer to

20   execute an image processing method of claim 11.